

Clinical Decision Support (CDS) Content and Health Level 7 (HL7)-Compliant Knowledge Artifacts (KNARTs)

Rheumatology: Psoriatic Arthritis Clinical Content White Paper

Department of Veterans Affairs (VA)



**Knowledge Based Systems (KBS)
Office of Informatics and Information Governance (OIIG)
Clinical Decision Support (CDS)**

Clinical Decision Support (CDS) Content and Health Level 7 (HL7)-Compliant Knowledge Artifacts (KNARTs): Rheumatology: Psoriatic Arthritis Clinical Content White Paper

by Department of Veterans Affairs (VA), , , and

Publication date December 2017

Copyright © 2018 B3 Group, Inc.

Copyright © 2018 Cognitive Medical Systems, Inc.

Contract: VA118-16-D-1008, Task Order (TO): VA-118-16-F-1008-0007

Table 1. Relevant KNART Information: Rheumatology: Psoriatic Arthritis

KNART Name	Associated CLIN
Psoriatic Arthritis - Order Set	CLIN0008CA

B3 Group, Inc.

NOTICE OF GOVERNMENT COPYRIGHT LICENSE AND UNLIMITED RIGHTS LICENSE

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Portions of this content are derivative works from content produced by Cognitive Medical Systems, Inc. licensed under the Apache License, Version 2.0.

Additional portions of this content are derivative works from content contributed by Motive Medical Intelligence Inc., under Creative Commons Attribution-ShareAlike 4.0.

Contributions from 2013-2018 were performed either by US Government employees, or under US Veterans Health Administration contracts.

US Veterans Health Administration contributions by government employees are work of the U.S. Government and are not subject to copyright protection in the United States. Portions contributed by government employees are USGovWork (17USC §105). Not subject to copyright.

See: <https://www.usa.gov/government-works>

Contribution by contractors to the US Veterans Health Administration during this period are contractually contributed under the Apache License, Version 2.0 and US Government sponsorship is acknowledged under Contract VA118-16-D-1008, Task Order VA11817F10080007.

Cognitive Medical Systems, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

This and related content produced by Cognitive Medical Systems, Inc. licensed under the Apache License, Version 2.0 is available at: <https://bitbucket.org/cogmedsys/hl7-kas-examples>

Additional portions of this content are derivative works from content contributed by Motive Medical Intelligence Inc., under Creative Commons Attribution-ShareAlike 4.0. <https://bitbucket.org/cogmedsys/kas-source-material>

Contributions from 2013-2018 were performed either by US Government employees, or under US Veterans Health Administration contracts.

US Veterans Health Administration contributions by government employees are work of the U.S. Government and are not subject to copyright protection in the United States. Portions contributed by government employees are USGovWork (17USC §105). Not subject to copyright. See: <https://www.usa.gov/government-works>

Contribution by contractors to the US Veterans Health Administration during this period are contractually contributed under the Apache License, Version 2.0 and US Government sponsorship is acknowledged under Contract VA118-16-D-1008-0007.

Table of Contents

VA Subject Matter Expert (SME) Panel	v
Introduction	vi
Conventions Used	vii
1. Psoriatic Arthritis	1
Clinical Context	1
Knowledge Artifacts	1
2. Rheumatology: Psoriatic Arthritis - Order Set	2
Knowledge Narrative	2
Medications	2
Laboratory Studies	2
Imaging and Diagnostic Studies	3
Consult Request	3
Patient and Caregiver Education	4
Reference for Provider Use	4
Bibliography/Evidence	5
A. Appendix A: Psoriatic Arthritis Guidelines	7
B. Appendix B: Basic Laboratory Panel Definition	8
Acronyms	9

List of Tables

1. Relevant KNART Information: Rheumatology: Psoriatic Arthritis	ii
1.1. Clinical Context Domains	1

VA Subject Matter Expert (SME) Panel

Name	Title	Project Role
Amy M. Joseph, MD	Chief of Rheumatology, St Louis VA Medical Center (VAMC), 915 N. Grand, St. Louis, MO 63106 Professor of Medicine, Washington University School of Medicine	SME, Primary
J. Steuart Richards, MD	Chief of Rheumatology, Pittsburgh VAMC, University Drive C, Pittsburgh, PA 15240 Clinical Professor Medicine, University of Pittsburgh	SME, Secondary

Introduction

The VA is committed to improving the ability of clinicians to provide care for patients while increasing quality, safety, and efficiency. Recognizing the importance of standardizing clinical knowledge in support of this goal, VA is implementing the Health Level 7 (*HL7*) Knowledge Artifact Specification for a wide range of VA clinical use cases. Knowledge Artifacts, referred to as (*KNARTs*), enable the structuring and encoding of clinical knowledge so the knowledge can be integrated with electronic health records to enable clinical decision support.

The purpose of this Clinical Content White Paper (*CCWP*) is to capture the clinical context and intent of *KNART* use cases in sufficient detail to provide the *KNART* authoring team with the clinical source material to construct the corresponding knowledge artifacts using the HL7 Knowledge Artifact Specification. This paper has been developed using material from a variety of sources: VA artifacts, clinical practice guidelines, evidence in the body of medical literature, and clinical expertise. After reviewing these sources, the material has been synthesized and harmonized under the guidance of VA subject matter experts to reflect clinical intent for this use case.

Unless otherwise noted, items within this white paper (e.g., documentation template fields, orderable items, etc.) are chosen to reflect the clinical intent at the time of creation. To provide an exhaustive list of all possible items and their variations is beyond the scope of this work.

Conventions Used

Conventions used within the knowledge artifact descriptions include:

<obtain>: Indicates a prompt to obtain the information listed

- If possible, the requested information should be obtained from the underlying system(s). Otherwise, prompting the user for information may be required
- The technical and clinical notes associated with a section should be consulted for specific constraints on the information (e.g., time-frame, patient interview, etc.)
- Default Values: Unless otherwise noted, *<obtain>* indicates to obtain the most recent observation. It is recognized that this default time-frame value may be altered by future implementations

[...]: Square brackets enclose explanatory text that indicates some action on the part of the clinical user, or general guidance to the clinical or technical teams. Examples include, but are not limited to:

[Begin ...], [End ...]: Indicates the start and end of specific areas to clearly delineate them for technical purposes.

[Activate ...]: Initiates another knowledge artifact or knowledge artifact section.

[Section Prompt: ...]: If this section is applicable, then the following prompt should be displayed to the user.

[Section Selection Behavior: ...]: Indicates technical constraints or considerations for the selection of items within the section.

[Attach: ...]: Indicates that the specified item should be attached to the documentation template if available.

[Link: ...]: Indicates that rather than attaching an item, a link should be included in the documentation template.

[Clinical Comment: ...]: Indicates clinical rationale or guidance.

[Technical Note: ...]: Indicates technical considerations or notes.

[If ...]: Indicates the beginning of a conditional section.

[Else, ...]: Indicates the beginning of the alternative branch of a conditional section.

[End if ...]: Indicates the end of a conditional section.

☐ *[Check box]*: Indicates items that should be selected based upon the section selection behavior.

Chapter 1. Psoriatic Arthritis

Clinical Context

[Begin Clinical Context.]

Psoriatic arthritis is a common comorbidity among patients with psoriasis. As a seronegative spondyloarthropathy, psoriatic arthritis requires clinical acumen for accurate diagnosis. Clinical suspicions can be confirmed through a careful history and physical exam with support from laboratory and radiographic studies. Nonsteroidal anti-inflammatory drugs can be used as initial therapy to alleviate painful symptoms in patients without contraindications. Early referral to a rheumatologist for evaluation and initiation of disease-modifying antirheumatic drugs (DMARDs) is recommended. “This order set may be used to assist a primary care or other clinical provider with evaluation, early treatment, and referral to rheumatology for a patient with possible psoriatic arthritis.”

Table 1.1. Clinical Context Domains

Target User	Provider to include Primary Care
Patient	Adult Patients
Priority	Routine
Specialty	Primary Care
Location	Outpatient

[End Clinical Context.]

Knowledge Artifacts

[Begin Knowledge Artifacts.]

This section describes the CDS knowledge artifact of the Psoriatic Arthritis/Rheumatology group:

- Order Set: Rheumatology: Psoriatic Arthritis KNART
 - Orderable items
 - Includes logic for appropriate display of the order set

[End Knowledge Artifacts.]

Chapter 2. Rheumatology: Psoriatic Arthritis - Order Set

[Begin Rheumatology: Psoriatic Arthritis - Order Set.]

Knowledge Narrative

[See Clinical Context Chapter 1.]

Medications

[Begin Medications.]

[Section Prompt: Consider one of the following medications for alleviation of pain.]

Note that nonsteroidal anti-inflammatory drugs (NSAIDs) may be contraindicated in patients with certain renal, gastrointestinal, or cardiovascular conditions.]

[Technical Note: Medications that display may need to be revised to match availability in local formularies.]

[Technical Note: If a user attempts to submit an order with more than 1 month's supply, the user should be prompted to consider that monitoring labs are required for > 1 month's supply.]

[Section Selection Behavior: Select one only. Optional.]

- ☐ Ibuprofen 600 mg tablet oral every 6 hours as needed for pain 120 tablets 0 refills routine
- ☐ Ibuprofen 800 mg tablet oral every 8 hours as needed for pain 90 tablets 0 refills routine
- ☐ Meloxicam 15 mg tablet oral daily 30 tablets 0 refills routine
- ☐ Naproxen 500 mg tablet oral twice a day as needed for pain 60 tablets 0 refills routine

[End Medications.]

Laboratory Studies

[Begin Laboratory Studies.]

[Technical Note: This section should be available for primary care providers and dermatologists performing pre-diagnostic workup for suspected psoriatic arthritis.]

[Section Prompt: Laboratory Studies.]

[Section Prompt: The following laboratory studies will display below for you to order only if the patient has not had the study done in the last 3 months.]

- ☐ Complete blood count 1 time routine
- ☐ Complete metabolic panel 1 time routine
- ☐ C-reactive protein 1 time routine
- ☐ Erythrocyte sedimentation rate 1 time routine

[Section Prompt: The following laboratory studies will display below for you to order only if the patient has never had this study done at any time in the past:]

- ☐ Anti-cyclic citrullinated peptide 1 time routine
- ☐ Human leukocyte antigen B27 1 time routine
- ☐ Rheumatoid factor 1 time routine
- ☐ Uric acid 1 time routine

[End Laboratory Studies.]

Imaging and Diagnostic Studies

[Begin Imaging and Diagnostic Studies.]

[Technical Note: This section should be available for primary care providers and dermatologists performing pre-diagnostic workup for suspected psoriatic arthritis.]

[Section Prompt: To avoid unnecessary imaging, please order imaging for only the most severely affected joints based upon history and clinical examination.]

- ☐ X-ray symptomatic joints to evaluate for possible psoriatic arthritis, routine
 - ☐ Hand-Left
 - ☐ Hand-Right
 - ☐ Foot-Left
 - ☐ Foot-Right
 - ☐ Knee-Left
 - ☐ Knee-Right
 - ☐ Other <obtain> joints

[Section Prompt: The following should be ordered for patients with complaint of low back pain.]

- ☐ X-ray sacroiliac joint to evaluate for possible psoriatic arthritis, routine

[End Imaging and Diagnostic Studies.]

Consult Request

[Begin Consult Request.]

[Section Prompt: Consult request.]

- ☐ Referral to rheumatology evaluate for possible psoriatic arthritis

[Section Prompt: Reason For Consult: Suspected Psoriatic Arthritis.]

<obtain> Details

[Technical Note: Reason for Consult “rheumatology” should be selected automatically and displayed.]

[Section Prompt: Consult Specialty: Rheumatology]

[Technical Note: Priority “routine” should be selected automatically and displayed.]

[Section Prompt: Priority: Routine]

[Technical Note: Priority “routine” should be selected automatically and displayed.]

[Section Select Behavior: Select one or more. Optional.]

- ☐ Morning Stiffness > 1 hour
 <obtain> number of affected joints
- ☐ Diagnosis of Psoriasis confirmed
- ☐ Presence of back pain that improves with use
- ☐ Presence of joint swelling
- <obtain> Referring Physician
- <obtain> Referring Physician Contact Information

[End Consult Request.]

Patient and Caregiver Education

[Begin Patient and Caregiver Education.]

[Section Prompt: Consider the following links as examples of patient educational material: <http://www.arthritis.org/living-with-arthritis/>; <https://www.rheumatology.org/I-Am-A/Patient-Caregiver>.]

- ☐ Psoriatic arthritis education

[End Patient and Caregiver Education.]

Reference for Provider Use

[Begin Reference for Provider Use.]

[Section Prompt: The following links contains clinical practice guidelines for education for the clinical provider:]

<http://www.arthritis.org/>; <https://www.rheumatology.org/Practice-Quality/Clinical-Support/Clinical-Practice-Guidelines/Psoriatic-Arthritis>.

[End Reference for Provider Use.]

[End Rheumatology: Psoriatic Arthritis - Order Set.]

Bibliography/Evidence

- [Coates, 2016] LC Coates, A Kavanaugh, and PJ, et al. Mease. “Group for Research and Assessment of Psoriasis and Psoriatic Arthritis 2015 treatment recommendations for psoriatic arthritis”. *Arthritis Rheumatol.* 2016. 68. (5). 1060-1071..
- [Coates, 2013] LC Coates, W Tillett, D, et al. Chandler, and BSR Clinical Affairs Committee and Standards, Audit and Guidelines Working Group and the BHPR.. “The 2012 BSR and BHPR guideline for the treatment of psoriatic arthritis with biologics”. *Rheumatology (Oxford)*. 2013. 52. (10). 1754-1757..
- [Combe, 2017] B Combe, R Landewe, and CI, et al. Daien. “2016 update of the EULAR recommendations for the management of early arthritis”. *Ann Rheum Dis.* 2017. 6. (6). 948-959..
- [Mandl, 2015] P Mandl, V Navarro-Compán , L, et al Terslev, and European League Against Rheumatism (EULAR).. “EULAR recommendations for the use of imaging in the diagnosis and management of spondyloarthritis in clinical practice”. *Ann Rheum Dis.* 2015. 74. (7). 1327-1339..
- U.S. National Library of Medicine. *CELECOXIB - celecoxib capsule [Jubilant Cadista Pharmaceuticals Inc.]. DailyMed website.* Revised April 2017. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=27d813ea-7798-09cb-734b-b970d7248f1f>.
- U.S. National Library of Medicine. *DICLOFENAC POTASSIUM- diclofenac potassium tablet, film coated [Mylan Pharmaceuticals Inc.]. DailyMed website.* Revised August 2017. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=fac1f8e7-f2b4-4de3-bd5c-d798d12273c1>.
- U.S. National Library of Medicine. *ETODOLAC- etodolac capsule ETODOLAC- etodolac tablet, film coated [Taro Pharmaceuticals U.S.A., Inc.]. DailyMed website.* Revised December 2015. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=ec82b108-6a6f-4d1b-82cb-831d4ed36c80>.
- U.S. National Library of Medicine. *FELDENE- piroxicam capsule [Keltman Pharmaceuticals Inc.]. DailyMed website.* Revised February 2010. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=9d3e528b-a748-4bc5-b604-e7e9c5ab9183>.
- U.S. National Library of Medicine. *FLURBIPROFEN- flurbiprofen tablet [Caraco Pharmaceutical Laboratories, Ltd.]. DailyMed website.* Revised August 2007. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f56be63c-88e4-4b78-b12d-d80e3e8b3893>.
- U.S. National Library of Medicine. *IBU- ibuprofen tablet [Dr. Reddy's Laboratories Limited]. DailyMed website.* . Revised October 2016. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=24731405-219c-79b4-ecf0-7d5fbfda94ba>.
- U.S. National Library of Medicine. *INDOMETHACIN - indomethacin capsule [Jubilant Cadista Pharmaceuticals Inc.]. DailyMed website.* Revised August 2017. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1e65948c-489c-4a32-65ce-60441fb23dd9>.
- U.S. National Library of Medicine. *KETOPROFEN- ketoprofen capsule [Teva Pharmaceuticals USA, Inc.]. DailyMed website.* . Revised May 2017. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c2c99853-1268-4998-a44b-2bf0c0b70fd2>.
- U.S. National Library of Medicine. *MELOXICAM- meloxicam tablet [Apotex Corp]. DailyMed website.* Revised May 2010. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=6513e46b-3229-685b-c83b-2209454fae71>.
- U.S. National Library of Medicine. *NABUMETONE- nabumentone tablet [Eon Labs, Inc.]. DailyMed website.* Revised October 2016. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=e21f89cf-ec07-4b07-9c9b-796b0111df39>.
- U.S. National Library of Medicine. *NAPROSYN- naproxen tablet; EC-NAPROSYN- naproxen tablet, delayed release; NAPROSYN- naproxen suspension; ANAPROX- naproxen sodium tablet; ANAPROX*

- DS- naproxen sodium tablet [Genentech, Inc.]. DailyMed website.* Revised March 2016. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=68848217-03c9-4377-9be6-6f567e629129>.
- U.S. National Library of Medicine. *OXAPROZIN- oxaprozin tablet [Amneal Pharmaceuticals LLC]. DailyMed website.* Revised May 2017. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d9b0ca6c-4c53-4f6e-918b-02a8c472a194>.
- U.S. National Library of Medicine. *REDICARE IBUPROFEN- ibuprofen 200mg tablet, film coated [Redicare LLC]. DailyMed website.* Revised January 2017. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=45eb33f0-71e2-11d5-e054-00144ff88e88>.
- U.S. National Library of Medicine. *SULINDAC- sulindac tablet [Actavis Pharma, Inc.]. DailyMed website.* Revised May 2016. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d8b9d517-5dd4-4c6b-8aa0-736bce87e7b4>.
- U.S. National Library of Medicine. *TYLENOL REGULAR STRENGTH- acetaminophen tablet [Johnson and Johnson Consumer Inc., McNeil Consumer Healthcare Division]. DailyMed Website.* Revised October 2016. ???.

Appendix A. Appendix A: Psoriatic Arthritis Guidelines

The following links should be available for provider reference: <http://www.arthritis.org/>; <https://www.rheumatology.org/Practice-Quality/Clinical-Support/Clinical-Practice-Guidelines/Psoriatic-Arthritis>.

Appendix B. Appendix B: Basic Laboratory Panel Definition

- Blood Urea Nitrogen
- Calcium
- Chloride
- CO₂ (Carbon Dioxide, Bicarbonate)
- Creatinine
- Glucose
- Potassium
- Sodium

Acronyms

Acronyms	Description
CCWP	Clinical Content White Paper
CDS	Clinical Decision Support
DMARDs	Disease-modifying antirheumatic drugs
HL7	Health Level 7
KBS	Knowledge Based Systems
KNART	Knowledge Artifact
NSAIDs	Nonsteroidal anti-inflammatory drugs
OIIG	Office of Informatics and Information Governance
SME	Subject Matter Expert
TO	Task Order
VA	Department of Veteran Affairs
VAMC	VA Medical Center